BACKGROUND OF THE INVENTION

The present invention relates to a method for treating a load of ligneous [[woody]] material made up of stacked elements, particularly a load of wood, by high-temperature heat ~~treatment.~~

~~It relates more~~ treatment. More particularly, the present invention relates to a method for thermally treating wood ~~thermally~~ so that the treated wood at least [[it]] retains, and potentially ~~or even~~ improves all of its characteristics, such as the [[its]] mechanical, acoustic and insulating properties of the wood, together with the [[its]] dimensional stability of the wood in the presence of moisture.

Such ~~moisture. Such a~~ heat treatment allows the media ~~mediums~~ that generate microorganisms and mold to be ~~eliminated.~~

~~This~~ eliminated. Such heat treatment also allows chemical linking between the macromolecular chains of the constituents of the wood in a controlled atmosphere and at a minimum temperature of 230 degrees Celsius. The main qualities acquired during such high-temperature heat treatment are [[of]] dimensional stability and markedly improved resistance to the kinds of attack that lead to ageing and rotting.

Co-owned French Patent Application No. ~~The prior art,~~

~~particularly patent~~ [[FR-A-]] 2 790 698 ~~filed by the same applicant, already~~ discloses [[such]] a device for the high-temperature heat treatment of ligneous ~~a woody~~ material. The disclosed device provides ~~That patent in particular describes~~ an enclosed treatment space ~~which comprises means~~ for processing a load of ligneous [[woody]] material that is to be treated. The [[, this]] load of ligneous [[woody]] material develops ~~delimiting~~, within the [[said]] enclosed space, a first volume known as a [[the]] "raised-pressure chamber" [[,]] which is situated upstream of the load ~~that is~~ to be treated, and a second volume known as a [[the]] "recovery chamber" [[,]] which is situated downstream of the [[said]] load. Means are provided [[,]] ~~heating means~~ for heating a heat-transfer fluid circulating in the [[said]] enclosed space, for ~~circulating means~~ continuously circulating the [[said]] heat-transfer fluid, ~~monitoring means~~ for monitoring the temperature and moisture content of the enclosed space, and ~~regulating means~~ for regulating the temperature and humidity of the enclosed ~~treatment~~ space. Seals are provided for [[,]] ~~and sealing means~~ sealing the top and bottom of the load of material contained within the treatment space.

The disclosed [[Such a]] device operates by ~~works on the principle of~~ continuously circulating ~~circulation of~~ a gaseous heat-transfer fluid which is [[gas]] formed of air, with its oxygen removed, and which is mixed with [[the]] combustion gases

to provide a neutral atmosphere. The heat-transfer gas is ~~Having been~~ heated in successive steps, up to a minimum temperature of 230 degrees Celsius, which ~~these~~ steps are [[being]] defined on the basis of parameters associated with the ligneous [[woody]] material that is to be treated. The [[, the]] heat-transfer gas circulates continuously throughout the treatment cycle, from the point where the heat-transfer gas [[it]] is heated ~~up by the heating means~~, for example, by ~~means of~~ a burner, toward the load of ligneous [[woody]] material ~~that is~~ to be treated. The heat-transfer gas circulates [[,]] ~~through which it passes~~ at a flow rate and speed which are in equilibrium at every point along the developed [[in its]] circuit, uniformly supplying the heat-transfer gas [[it]] with the heat energy needed for the heat treatment.

The disclosed ~~treatment. The~~ treatment cycle requires several passes of the heat-transfer gas [[fluid]] through the load. When the [[this]] cycle is completed [[over]], a [[the]] drop in temperature takes place, in successive steps, by spraying high-pressure cold water in the heat-transfer gas circuit in the raised-pressure chamber. The pressure within the enclosed space is maintained, in the treatment zone, by ~~the arrival of~~ a neutral gas which compensates for the reduction in volume of the heat-transfer gas [[fluid]] during this cooling phase.

Although [[such]] heat-treatment devices of this type are known, such devices [[they]] continue to undergo development

for purposes of ~~aimed at~~ allowing a higher level of safety and a higher level of quality and uniformity of the heat treatment across the various wood loads ~~that there are.~~

~~Thus,~~ to be treated. It is, therefore, the object of the present invention [[is]] to provide ~~propose~~ an improved method for the high-temperature heat treatment of ~~treating~~ a load of ligneous [[woody]] material made up of stacked elements, particularly a load of wood, ~~by high-temperature heat treatment,~~ which makes it possible to [[take]] account for [[of]] the behavior of the treated products in terms of their thermal conductivity and their resistance to the release of ~~toward releasing their~~ liquid or degradable substances under the effect of high temperature.

SUMMARY OF THE INVENTION

To this end, and in accordance with the ~~subject of the~~ present invention, [[is]] a method is provided for treating a load of ligneous [[woody]] material made up of stacked elements, particularly a load of wood, by high-temperature heat treatment in [[,]] ~~using~~ an enclosed treatment space which includes various components ~~comprises means~~ for processing the [[a]] load of ligneous [[woody]] material ~~that is~~ to be treated.

The ~~treated, this~~ load of ligneous [[woody]] material defines ~~delimiting~~, within the [[said]] enclosed space, a first

volume known as a [[the]] "raised-pressure chamber" [[,]] which is situated upstream of the load ~~that is~~ to be treated, and a second volume known as a [[the]] "recovery chamber" [[,]] which is situated downstream of the [[said]] load. A heater is provided [[,]] ~~heating means~~ for heating a heat-transfer fluid circulating in the [[said]] enclosed space. The heat-transfer fluid is [[,]] ~~circulating means~~ continuously circulated ~~circulating said heat-transfer fluid~~, and ~~monitoring means for monitoring~~ the temperature and moisture content of the enclosed space is monitored, ~~regulating means~~ for regulation of ~~regulating~~ the temperature and humidity of the enclosed treatment space. Seals are provided for [[,]] ~~and sealing means~~ sealing the top and bottom of the load of material.

In accordance with the present invention, ~~material, said method comprising the steps consisting:~~

~~in permanently monitoring and measuring~~ the atmosphere in each of the [[said]] chambers is continuously monitored using sensors for measuring the temperature and moisture content of the enclosed space. Data received ~~monitoring means then in comparing the data emanating~~ from the sensors is then compared, for ~~these monitoring means so as to act~~ simultaneously and uniformly adjusting [[on]] the ~~altering of the power of the means for~~ heating and, if appropriate, ~~any, on~~ the cooling [[,]] of the heat-transfer fluid, to perform ~~gas by the regulating means thus running~~ a heat-treatment cycle. The [[, the]] rise in temperature of

the heat-treatment cycle [[which]] is either linear, or proceeds in steps, with such [[, the]] temperature step levels and their duration being preestablished. The [[; this]] rise in temperature is then governed, as a function of the behavior of the load of ligneous [[woody]] material, in terms of its thermal conductivity and as a function of equilibrium between the flow rate and the speed of the heat-transfer fluid between the two chambers.

Each ~~According to an advantageous arrangement, each~~ of the temperature levels in the treatment cycle is advantageously reached when there is equilibrium between the temperature in the raised-pressure chamber and the temperature in the recovery chamber. Such [[,]] ~~and said~~ equilibrium is determined using the following formulae:

$T1 = T2 - \Delta°C$, when the temperature in the treatment cycle is rising, and

$T2 = T1 + \Delta'°C$, when the temperature in the treatment cycle is falling, [[where]]

where Δ and Δ' are temperature constants ranging between 5 and 25 degrees ~~Celsius.~~

~~According to~~ Celsius. In a preferred embodiment, the constants Δ and Δ' are respectively equal to 5 degrees Celsius and 20 degrees Celsius.

Further in accordance with ~~Still according to~~ the present invention, progression to a level at least equal to 100 degrees Celsius is permitted only if the volume of the enclosed space contains an oxygen content [[of]] below ~~3%.~~

~~According to another advantageous arrangement~~ 3%. Advantageously, if an incident is detected which involves ~~concerning the~~ heating of the enclosed space ~~means is detected~~ above a mean temperature in excess of 120 degrees Celsius, the temperature is regulated ~~regulating means are set off~~ until a mean temperature of below 100 degrees Celsius is detected in the chambers before any resumption of the treatment cycle is permitted.

In ~~According to yet~~ another advantageous arrangement, [[the]] electronic controls are provided for [[means]] controlling the foregoing operations. The electronic controls [[oven]] are [[also]] connected to computerized equipment that allows [[all]] the data from the sensors arranged in the enclosed space to be printed out during a treatment cycle, together with [[the]] temperature curves, in real time.

In ~~According to~~ another advantageous arrangement, the speed at which the heat-transfer fluid circulates is kept constant in the enclosed treatment space by monitoring the [[said]] speed of

circulation and by adjusting ~~acting on~~ the flow rate of the ~~means that propel said~~ heat-transfer fluid.

Further ~~The characteristics of the invention and mentioned hereinabove, together with others, will become more clearly apparent upon reading the following~~ description of an exemplary embodiment of the present invention is provided hereafter, with reference to the following drawing.

BRIEF DESCRIPTION OF THE DRAWING

The single attached figure illustrates a ~~which is a schematic depiction in~~ vertical section of a device for the high-temperature heat treatment of a ligneous [[woody]] material.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The single figure shows an enclosed space 1 in the form of an oven which is generally comprised of ~~comprising~~ four vertical walls 2 and a roof 3. At least one of the vertical walls 2 of the enclosed space 1 is provided with a door 4 so that a ligneous ~~the woody~~ material 5 ~~that is~~ to be treated can be loaded into the oven.

The illustrated [[This]] load of ligneous [[woody]] material 5 is made up of wooden planks 6 stacked on top of one another to

form a more or less [[a]] parallelepipedal structure when ~~intended to be~~ placed inside the enclosed treatment space ~~1.~~

~~Advantageously, the~~ 1. The planks 6 are advantageously placed so ~~in such a way~~ that their length is in the longitudinal direction of the enclosed space 1, and so that they are separated from one another by ~~spacer pieces in the form of~~ spacers 7 placed in a [[their]] transverse direction. The thickness of the [[these]] spacers 7 is defined according to the thickness of the wood that is to be treated, the dimensions of the load 5 and the physical parameters relating to ~~concerned with the~~ circulation of a [[the]] fluid in the enclosed space 1 and through the [[said]] load 5.

The load 5 of ligneous [[woody]] material to be treated defines ~~5 delimits~~, within the enclosed space 1, a first volume 8 situated upstream of the load 5, which will hereafter be referred to as a ~~known as the~~ "raised-pressure chamber", ~~situated upstream of the load 5,~~ and a second volume 9 situated downstream of the load 5, which will hereafter be referred to as a ~~known as the~~ "recovery chamber" [[,]] ~~situated downstream of the load 5~~.

The ~~Furthermore, said~~ enclosed space 1 is provided with various components which are known from French Patent Application No. [[,]] ~~as mentioned in patent application~~ [[FR-A-]] 2 790 698, which is incorporated ~~forms an integral part of this application~~

by reference as if fully set forth herein. A heater [[,]] ~~with heating means~~ 10 is provided for heating a heat-transfer fluid, which can be a gas, such as air, and which is to circulate ~~circulating~~ in the [[said]] enclosed space 1. A blower [[,]] ~~circulating means~~ 11 is provided for continuously circulating the [[said]] heat-transfer fluid through the enclosed space 1. Sensors 14, 15 are provided [[, means]] for respectively monitoring the temperature and the moisture content of the enclosed space 1. A regulator [[,]] ~~regulating means~~ 12 is provided for regulating the temperature and the humidity of the enclosed ~~treatment~~ space 1. Seals 16, 17 are provided for respectively ~~and sealing means~~ sealing the top and the bottom of the load of material 5, to prevent ~~thus preventing~~ the heat-transfer fluid from following the path of least resistance through ~~its preferred route out of~~ the load. Programmable electronic controls (not shown) are provided for controlling temperature variation step levels and moisture content in the enclosed treatment space 1.

As an illustration, the heater ~~In order to illustrate the abovementioned means, it will be noted that the means~~ 10 for heating the heat-transfer fluid is comprised of at least one gas burner arranged in the upper part of the enclosed space 1, in a chamber 13 which will hereafter be referred to as a ~~known as the~~ "heating chamber". The blower [[,]] ~~while the circulating means~~ 11 is comprised ~~consist~~ of at least one fan for drawing ~~intended~~

~~to draw~~ the heat-transfer fluid from [[out of]] the recovery chamber 9 and for discharging the heat-transfer fluid ~~propel it~~ into the heating chamber 13. The regulator 12 is comprised ~~regulating means consist, for example,~~ of a horizontally disposed, high-pressure water spray boom 12 situated in the raised-pressure chamber 8. The [[This]] spray boom 12 is provided with a plurality ~~number~~ of nozzles for spraying a high flow rate mist of cold or chilled water.

~~Programmable electronic control means, not depicted, allow the temperature variation step levels and moisture content in the enclosed treatment space to be controlled.~~

In accordance with the present invention, the [[This]] enclosed treatment space 1 is advantageously operated ~~driven~~ by a method for ~~according to the invention that consists in~~ permanently monitoring and measuring the atmosphere in each of the [[said]] chambers 8 and 9, using the sensors 14, 15, and ~~temperature monitoring means~~ then [[in]] comparing the data received ~~emanating~~ from the sensors 14, 15 to run a heat-treatment cycle. The data received from the sensors 14, 15 is used ~~these monitoring means so as~~ to [[act]] simultaneously and uniformly adjust the output of the heater ~~on the altering of the power of the means~~ 10, for heating the heat-transfer fluid, and the output of the regulator 12, for ~~if any, on the~~ cooling [[, of]] the heat-transfer fluid, if required. This results in a

~~gas by the regulating means 12 thus running a~~ heat-treatment cycle having [[, the]] temperature step levels and a [[the]] duration [[of]] which are preestablished, as a function of the behavior of the load of ligneous [[woody]] material 5 in terms of [[its]] thermal conductivity and [[of]] equilibrium between the flow rate and the speed of the heat-transfer fluid between the two chambers 8 and ~~9.~~

~~According to~~ 9. As an alternative ~~form of embodiment~~, a linear increase ~~it is understood that the rise~~ in temperature can [[may]] be achieved ~~linearly~~.

The sensors 14, 15 ~~It will be noted that the monitoring means~~ are, more [[in]] particularly, temperature, pressure, humidity and oxygen-analysis sensors arranged in the two chambers 8 and 9. Data from the sensors 14, 15 is used to operate the heater ~~making it possible to establish the authority to set off the heating means~~ 10 and the blower ~~circulating means~~ 11, for continuously circulating the heat-transfer ~~circulating the~~ fluid, or to [[,]] ~~on the other hand,~~ disable the heater 10 and the blower 11 [[these]] and engage the regulator ~~regulating means~~ 12 ~~for regulating temperature and humidity when~~, in particular, when the temperature in the recovery chamber 9 exceeds the temperature in the raised-pressure chamber 8 during [[the]] temperature increases [[rise]] of the preestablished ~~pre-established~~ treatment cycle.

Various ~~The various~~ pressure and temperature zones are created by the pressure drop resulting from passage of the heat-transfer fluid ~~on passing~~ through the products that are [[to]] being treated [[5]] and by the exchange of heat energy between the heat-transfer fluid [[gas]] and the [[said]] products being treated. This allows for easy and precise control of the operations being implemented, and of the treatment ~~parameters.~~

~~Thus, the~~ parameters. The levels achieved during a preestablished heat-treatment cycle (which is [[and]] built into the electronic controls) are ~~means is~~ determined by equilibrium between the temperatures in the two chambers 8 and 9. This equilibrium is determined using ~~according to~~ the formulae:

T1 ~~rule T1~~ = T2 - Δ°C, when the temperature is rising, and

T2 ~~and according to the rule T2~~ = T1 + Δ'°C, when the temperature [[it]] is falling,

where ~~falling, where~~ T1 corresponds to the temperature in the raised-pressure chamber 8, [[and]] T2 corresponds to the temperature in the recovery chamber 9, and Δ and Δ' correspond to temperature constants illustrated below ~~hereinbelow~~.

One mode of operation achieved using ~~according to~~ the method of the present invention, ~~is illustrated hereinbelow~~ for a ligneous [[woody]] material 5 such as wood with a moisture content of 12 to ~~14%.~~

~~Levels~~ 14%, will now be illustrated. Levels ~~were determined~~ for executing [[a]] the illustrated heat-treatment cycle include ~~comprising~~ an increase [[rise]] in temperature, up to 230 degrees Celsius, followed by [[then]] a controlled drop in temperature which is shown in the following table. ~~as follows:~~

1st level	40°C	Duration: 1 hour after equilibrium	Moisture content 60%
2nd level	60°C	Duration: 2 hours after equilibrium	Moisture content 60%
3rd level	100°C	Duration: 2 hours after equilibrium	Moisture content 40%
4th level	140°C	Duration: 1 hour after equilibrium	O_2<3 and moisture content 20%
5th level	170°C	Equilibrium	
6th level	190°C	Equilibrium	
7th level	210°C	Equilibrium	
8th level	230°C	Equilibrium	

As soon as the oven is brought into operation, the volume of air contained within the enclosed treatment space 1 is caused to circulate, ~~set into circulation~~ using the blower 11 [[fans]], and the [[said]] enclosed treatment space is maintained ~~being kept~~ at a pressure above atmospheric ~~pressure.~~

~~Tappings~~ pressure. Tappings are made in the [[said]] chambers 8 and 9 for ~~in order to~~ collecting data relating, in particular, to the flow rate and speed of the heat-transfer fluid

inside the enclosed ~~space.~~

~~The~~ space 1. The volume of air is circulated until the determined flow rate and the determined speed of the air circulating in the two chambers 8 and 9 reach equilibrium, [[thus]] ensuring a uniform transfer of heat to all points of the load of ligneous [[woody]] material 5.

The ~~Finally, the~~ treatment cycle then begins by operating ~~setting off~~ the heater ~~heating means~~ 10 to [[that]] heat the heat-transfer fluid. Constant measurement of the oxygen content of the heat-transfer fluid in the raised-pressure chamber 8 and constant measurement of the carbon monoxide (CO) gas content ~~installed~~ in the upper part of the chambers 8 and 9 allows operation of the heater ~~heating means~~ 10 to be disabled if the oxygen (O) or carbon monoxide (CO) gas concentrations exceed a given level.

If the temperature in the enclosed space 1 reaches 45 degrees Celsius, which corresponds to the threshold for the first temperature level (T1) in the chamber 8 [[T1]], the output of the burners of the heater 10 is reduced. If ~~their power and if~~ the temperature continues to rise, the spray ~~sprinkling~~ boom 12 is operated to sprinkle ~~comes into action and sprinkles~~ cold water and then, if necessary, chilled water, into the heat-transfer fluid.

As previously mentioned, the [[The]] temperature level for the cycle is reached [[,]] ~~as mentioned hereinabove,~~ when the temperature in the raised-pressure chamber 8 is equal to the temperature in the recovery chamber 9 minus a temperature constant Δ, which is preferably equal to 5 degrees Celsius. This temperature level is maintained for the determined duration of the treatment cycle which, in this example, was one hour, during which the ~~regulating this~~ temperature is regulated as previously ~~using the means described hereinabove.~~

~~As~~ described. As soon as the time duration for the temperature level has elapsed, the electronic controls [[means]] trigger an increase ~~the rise~~ in temperature to the next level [[above]], under the same operating conditions. This continues [[,]] ~~and so on~~ until the temperature of 230 degrees Celsius is reached.

Advantageously, ~~It will advantageously be noted that~~ progression from the level of 100 degrees Celsius is preferably subject to the condition that the volume of the enclosed space 1 contains less than 3% ~~oxygen.~~

~~Furthermore~~ oxygen. Furthermore, the enclosed space 1 of the oven is kept at a pressure of 4 ± 1 mmCE during the treatment cycle. To do this, the [[said]] enclosed space 1 is provided, in [[a]] known manner, [[way]] with a calibrated relief valve to

allow any surplus heat-transfer gas generated by the burners of the heater 10 to be discharged.

After the treatment temperature has been reached, the temperature in the enclosed space 1 is lowered, in steps, by spraying cold or chilled water into the heat-transfer fluid ~~circuit~~ using the spray ~~sprinkling~~ boom 12. These lowered temperature [[-]] ~~lowering~~ levels are, for example, set at ~~defined as follows:~~ 200, 170, 130, 90 and 50 degrees ~~Celsius.~~

~~As already~~ Celsius. As previously mentioned ~~hereineabove~~, progression from one level to the next preferably takes place when the equilibrium of the temperature (T2) in the recovery chamber 9 is ~~preferably~~ equal to the temperature (T1) ~~recorded~~ in the raised-pressure chamber 8 plus a temperature constant Δ', which is defined, for example, as 20 degrees Celsius.

It will be noted that when the temperature is dropping, the electronic controls [[means]] record the pressure in the enclosed space 1 and compensate for [[the]] depression brought about by the reduction in volume of heat-transfer gas by automatically introducing ~~sending in~~ nitrogen to maintain the pressure in the chamber. The electronic controls for the oven are also connected to computerized equipment that allows all of the data from the sensors 14, 15 arranged in the enclosed space 1 to be printed out during a treatment cycle, together with temperature curves, in

real time.

To ~~In order to~~ ensure safety within the enclosed space 1, the method of ~~according to~~ the present invention ensures ~~makes sure,~~ that if there is an incident involving the heater 10 ~~heating means~~ when the mean temperature of the chambers 8 and 9 is above 120 degrees Celsius, the temperature of the enclosed space 1 is dropped. In ~~in a similar way to that described hereinabove using the sprinkling booms until, in~~ particular, the temperature of the enclosed space 1 is dropped until a mean chamber temperature of less than 100 degrees Celsius is reached before any resumption of the [[a]] treatment cycle is permitted. The temperature of the enclosed space 1 is dropped using the spray boom 12, as previously described.

~~The electronic control means controlling the oven are also connected to computerized equipment that allows all the data from the sensors arranged in the enclosed space to be printed out during a treatment cycle together with the temperature curves, in real time.~~

~~It will be noted that, in order to obtain good results in terms of the quality and uniformity of the heat treatment, it is preferable not to mix products of different thicknesses or species in the same load.~~

One of the main advantages of the foregoing method ~~technique~~ lies in the principle of operation of the oven. To this end, the oven is caused [[,]] ~~which causes it~~ to operate in a natural way, according to the behavior of the products being treated in terms of their thermal conductivity and their resistance to the release of ~~releasing their~~ liquid or degradable substances under the effect of high temperature.

The ~~temperature. The suite of~~ electronic controls and computerized equipment ~~means acts~~ only serve to monitor ~~as a means of monitoring~~ the various safety features of the oven, permitting or preventing [[the]] requested actions and relaying information about [[the]] operations of the oven. However, to allow such electronic controls and computerized equipment to yield the results expected, the speed at which the heat-transfer fluid is circulated is kept constant in the enclosed treatment space, and through the load of ligneous material, by regulating the flow rate of the heat-transfer fluid.

To obtain good results in terms of the quality and uniformity of the heat treatment being performed, it is preferable not to mix products of different thicknesses or species in the same load. However, the foregoing [[Such a]] method advantageously allows the treatment of very different species without having to produce ~~produced~~ specific programs. The manner [[way]] in which such an oven operates will ~~works should~~ automatically adapt ~~itself~~ to the requirements of the

products being treated, although it may be necessary to alter the temperature levels and the durations for which such temperature levels [[they]] are maintained.

Although the present invention has been described in terms of ~~conjunction with~~ one particular embodiment, the present invention [[it]] encompasses all technical equivalents of the means described.

~~In order to allow the suite of detection and control means of a treatment device according to the invention to yield the expected results, the speed at which the heat-transfer fluid circulates is kept constant in the enclosed treatment space and through the load of woody material by action on the flow rate of the means that drive the heat-transfer fluid.~~

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(71)(72) Déposant et inventeur: LAURENCOT, Jean [FR/FR]; "Les Clos", 14B, rue de la Gare, F–25720 Beure (FR).

(74) Mandataire: POUPON, Michel; Cabinet Michel Poupon, 3, rue Ferdinand Brunot, F–88026 Epinal Cedex (FR).

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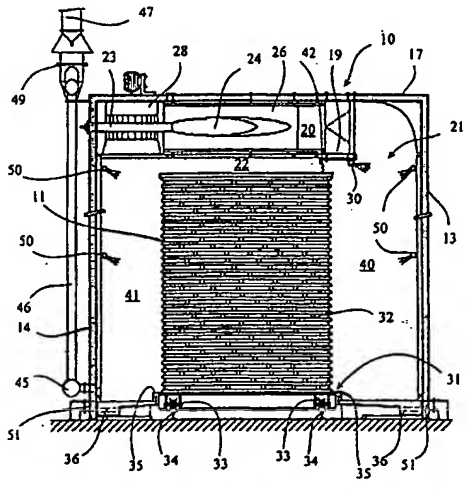
(54) Title: DEVICE FOR HIGH TEMPERATURE HEAT TREATMENT OF LIGNEOUS MATERIAL

(54) Titre: DISPOSITIF POUR LE TRAITEMENT THERMIQUE A HAUTE TEMPERATURE D'UNE MATIERE LIGNEUSE

(57) Abstract

The invention concerns a device for the high temperature heat treatment of a ligneous material such as wood in order to preserve the properties and dimensional stability of said wood in the presence of humidity. Said device comprises a sealed chamber including an internal partition (19) defining a heat chamber (20) and an opening (21) emerging into a treatment zone (22) wherein a load (11) of stacked wood elements is introduced. The chamber (20) contains burners (23) for heating a heat–conveying medium. A nozzle (26) associated with a deflector enables to homogenize the gas stream emitted by each burner before it enters the treatment zone (22). Ventilators (28) co–operate with the opening (21) to cause the heat–conveying medium to circulate through the load (11). A ramp of water sprayers (30) humidifies the treatment zone (22) when the temperature in the chamber is rising, stabilises said temperature during treatment and cools the chamber after treatment. An adjustable screen (42) maintains a constant pressure in the treatment zone (22). Orifices (44) co–operate with a discharge circuit provided with a sealed regulator valve (49) form means regulating the pressure in the chamber.



(57) Abrégé

L'invention concerne un dispositif pour le traitement thermique à haute température d'une matière ligneuse telle que du bois destiné à préserver les caractéristiques et la stabilité dimensionnelle de ce bois en présence d'humidité. Le dispositif comporte une enceinte étanche comportant une cloison (19) définissant une chambre de chauffage (20) et une ouverture (21) débouchant dans une zone de traitement (22) dans laquelle une charge (11) d'éléments de bois empilés est introduite. La chambre (20) renferme des brûleurs (23) pour le chauffage d'un fluide caloporteur. Un cône (26) associé à un déflecteur permet d'homogénéiser le flux de gaz émis par chaque brûleur avant son entrée dans la zone de traitement (22). Des ventilateurs (28) coopèrent avec l'ouverture (21) pour faire circuler le fluide à travers la charge (11). Une rampe de pulvérisation d'eau (30) assure l'humidification de la zone de traitement (22) durant la montée en température de l'enceinte, la stabilisation de cette température pendant le traitement et la refroidissement de l'enceinte après le traitement. Un écran réglable (42) maintient une pression constante dans la zone de traitement (22). Des orifices (44) coopèrent avec un circuit d'évacuation pourvu d'un clapet étanche taré (49) constituant les moyens de réglage de la pression dans l'enceinte.